

ABSTRACT OF THE DISCLOSURE

A mass transfer column includes a feed device that is used to de-entrain liquid and more uniformly distribute vapor across a horizontal cross section of the column after a vapor or mixed phase stream has been directed into the column through a radially oriented feed nozzle. The feed device includes an annular passageway formed in the spacing between the column shell and an inner wall spaced inwardly from the shell. A deflector with oppositely directed deflecting surfaces is positioned at an inlet from the feed nozzle to the annular passageway and splits the vapor or mixed phase stream into two roughly equal streams that flow in opposite circumferential directions in the annular passageway. At least one pair of turning vanes is spaced on opposite sides of the deflecting surfaces in the annular passageway to create subpassages through which the vapor or mixed phase stream flows. The subpassages reduce the amount of vapor or mixed phase stream flow that impacts against the inner wall of the feed device at the inlet. The turning vanes unexpectedly reduce the pressure drop that occurs as the vapor or mixed phase stream is redirected from its radial entry direction to the circumferential direction in the annular passageway. By reducing the pressure drop, improvements in product yield and vapor distribution can be achieved.